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Improvements in and Relating to
Bombshelters

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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements in and relating to Bombshelters

I, MORTON M. ROSENFELD, of 271, Madison Avenue, New York, New York, United States of America, a Citizen of the United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to a bombshelter, and more particularly to a bombshelter for individual homes which may be made relatively cheaply, and which afford some protection against the radioactivity and
15 intense heat attendant upon the explosion of an atom bomb or a hydrogen bomb.

The development of nuclear weapons has greatly magnified the problem of protecting civilian populations against bombing raids. Due to the force and power of nuclear weapons, there is no known method of saving persons who are directly in the area of the burst of an atom bomb or in the proximate vicinity thereof. The focal centre of an atom bomb burst is sometimes referred to as
25 "ground-zero", and no structural materials presently known which can withstand such burst at its focal zone. Accordingly, the use of bombshelters against nuclear weapons is primarily intended to protect persons situated some distance from ground-zero, such as three-
30 quarters of a mile or more.

In recent years a variety of proposals have been advanced for bombshelters, but in the main they have not been satisfactory. Thus, bombshelters have been designed as metal vessels having a single entrance, which metal shelters are intended to be disposed beneath the ground proximate a residence. Thus,
40 they are unsightly, causing rises and hills in the ground, and in the event of a sudden air attack, they are relatively inaccessible not being directly connected to the residence. Moreover, the single entrance of such
45 shelters may become clogged by the bomb

burst, with the resultant fatal entombment of the occupants within the shelter.

Other bombshelters have been proposed which are at the same level as the basement floor of the residence to which they are appurtenant. These too are not altogether desirable because they require a covering of earth of at least three feet to provide any degree of protection, and thus require the surrounding land of the house to be graded to an unsightly degree in order to ensure protection of the occupants within the shelter. Moreover, shelters which are mere extensions of the basement, and which have but a single exit, namely through the basement, are prone to result in entrapment of the occupants of the shelter when the building above the basement collapses. Thus, the collapse of a building adjacent a shelter whose exit lies solely through the building's basement would in all likelihood prevent the escape of the occupants of the shelter, notwithstanding their survival of the blast which demolished the building.

In addition to the foregoing, a salient consideration which has not been taken advantage of in prior bomb shelter designs are the characteristics of gamma radiation. Gamma radiation constitutes the longest carrying and most penetrating and most deadly radiation released by the explosion of an atom bomb or a hydrogen bomb. Gamma radiation consists of electromagnetic waves of very short wavelength and is known to have a far greater carrying power and penetrating effect than alpha particles, beta particles and other radioactive by-products of an atom bomb explosion.

A fundamental characteristic of gamma radiation is that it travels in a straight line from its source.

This invention has as a further object the provision of an effective bombshelter, which may be cheaply and easily constructed.

This invention has as a further object the provision of a bombshelter which is appur-

tenant to and readily accessible from a conventional basement-containing family dwelling.

This invention has as a further object the provision of a bombshelter, appurtenant to a basement-containing family dwelling, which is unobtrusive and which does not interfere with the enjoyment of such family dwelling.

Other objects will appear hereinafter.

In order that the invention may be thoroughly understood a bombshelter in accordance with it will be described in some detail, by way of example, with reference to the accompanying drawing, in which:—

Figure 1 is a vertical section through the bombshelter on the line 1—1 of Figure 2;

Figure 2 is a horizontal section of the bombshelter on the line 2—2 of Figure 1, and

Figure 3 is a fragmentary vertical section of the entrance to the bombshelter from the basement of the appurtenant family dwelling.

In the drawing, a shelter 10 is shown situated adjacent a basement-containing dwelling, such as a family residence, somewhat below the level of the basement floor (see Figure 3). By being below the level of the basement floor 12, bombshelter 10 may be covered by upwards of three feet of earth 14 without affecting the grade level of the lawn 16 adjacent the residence.

The bombshelter 10 is preferably formed of four pre-cast elements of reinforced concrete designated 18, 20, 22 and 24. As shown particularly in Figures 1 and 2, these precast reinforced concrete elements 18, 20, 22 and 24 do not have flat abutting edges, but instead, the abutting cemented edges are rabbeted as at 26, 28, 30 and 32. This provides maximum strength at the joint, and as will be more fully explained below, provides maximum resistance to the penetration of gamma radiation.

The entrance to bombshelter 10 is from the basement floor 12 over a monolithic flood barrier 34 which provides protection against flooding should a bursting pipe in the basement flood the basement with water. Behind the barrier 34 are stairs 36 which descend to bombshelter 10.

Stairs 36, as is evident from an examination of Figure 3, are at right angles to the entrance door 38 of bombshelter 10.

It is also to be noted from Figure 3 that bombshelter 10 is situated well below the level of basement floor 12, yet the bottom of door 38 is relatively close to the level of the basement floor 12. Thus, the stairwell for stairs 36 can accommodate an appreciable amount of overflow water, should water in the basement flood over monolithic barrier 34, prior to any degree of contact between such water and door 38.

Behind door 38 and within bombshelter 10 is a small partitioned area designated 40 (see Figure 2). Partitioned area 40 is provided with

a door 42, at right angles to door 38, for permitting access to the part 43 of the bombshelter 10 to be occupied. As shown in the drawings, door 42 is preferably a sliding door.

With partitioned area 40 the bombshelter's generator and air purifier may be situated. The generator may be powered by means of an external tank or cylinder of gasoline or other fuel, and hand-operated emergency means may be provided for operating such generator. The generator may be used to operate lights within bombshelter 10, and to operate the air purifier for the ventilator system therefor.

The ventilator system for the bombshelter 10 preferably comprises an internal air purifier, which removes carbon dioxide from the air. This type of internal air purifier is well known to the art and as it forms no part of the present invention, is not described herein. An internal air purifier is to be preferred over an external ventilator duct, as the use of such a duct not only weakens the bombshelter at the point of its emergence therefrom, but is apt to be readily destroyed by the explosion of the atom bomb. Filter means 45 of conventional design for the ventilator used in bombshelter 10 is shown in Figure 1.

An alternative exit in the event of the collapse of the dwelling adjacent bombshelter 10 is provided at the portion of bombshelter 10 remote from door 38. This exit includes a cover 44 made of a heavy and durable metal, which may be a metal including lead or other metallic element which effectively impedes the penetration of gamma radiation. Cover 44 is provided with a depending annular skirt which tightly fits on to an upper flange 46 of bombshelter escape hatch 48. The upper end of escape hatch 48 is provided with a powerful manually operated mechanical jack 50 which may be used to remove cover 44. A vertical ladder 52 is provided within escape hatch 48 and extends from the floor thereof to a point just below cover 44.

Escape hatch 48 is partitioned off from the remainder of bombshelter 10 by reinforced concrete partitions 54, a passageway 56 being provided from escape hatch 48 to an adjacent positioned area 58 within bombshelter 10. Access may be had to the partitioned area 58 from the part 43 of bombshelter 10 by means of sliding door 60 which is positioned at right angles to passageway 56.

In the bomb shelter 10 of the present invention, door 38 is at right angles to doors 42 and 60, as is cover 44, so that gamma radiation moving as it does in a straight line will always have presented to it at least one thickness of reinforced concrete and a door. Thus, if either or both cover 44 and door 38 in bombshelter 10 are inadvertently left open, or smashed by the force of the nuclear explosion, the occupants of bombshelter 10

will still have a concrete wall and a door protecting them from gamma radiation.

5 The use of prefabricated concrete structural elements with rabbeted joints ensures maximum strength. Thus, even at the joint region, such as at joints 26, 28, 30 and 32 there is always presented at least a half thickness of concrete in addition to the mortar to gamma radiation emanating from the nuclear weapon.

10 The walls of the bombshelter 10 and the doors thereof may be coated with lead coatings or sheets, or lead or other gamma radiation resisting material may be directly incorporated into the building components of bombshelter 10.

WHAT I CLAIM IS:—

1. A subterranean bombshelter including a generally imperforate shell, an entrance into the shelter formed substantially above the level of the shelter floor in a vertical wall of the shell, the entrance including a door, a surrounding partition within the shelter proximate to and spaced from said door, and an interior door in the partition positioned in a plane generally normal to that of the entrance door.

2. A bombshelter according to Claim 1 having an escape hatchway extending through the uppermost shell member at a point remote from the entrance, a fitted cover for the hatchway, and means in the upper part of the hatchway for raising the cover.

3. A bombshelter according to Claim 2 in

which a surrounding partition is provided within the shelter proximate the escape hatchway, and an interior door in said partition is positioned in a plane generally normal to the plane of the entrance door.

4. A subterranean bombshelter according to any preceding claim in which the shell is formed from precast concrete shell members joined together along rabbeted joint lines.

5. A bombshelter according to any preceding claim in which the partition or partitions is or are of concrete.

6. A subterranean bombshelter substantially as described with reference to the accompanying drawings.

7. A residence dwelling comprising a basement, a passageway in the wall of said basement, said passageway descending appreciably below the level of the floor of the basement, an upright barrier on the floor of the basement barring the entrance to the passageway, the space between the top of said barrier and the ceiling of the passageway being sufficient to permit a person to obtain access to the passageway, and a bombshelter as claimed in any preceding claim, said passageway leading to the entrance of the bombshelter.

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COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of
the Original on a reduced scale

